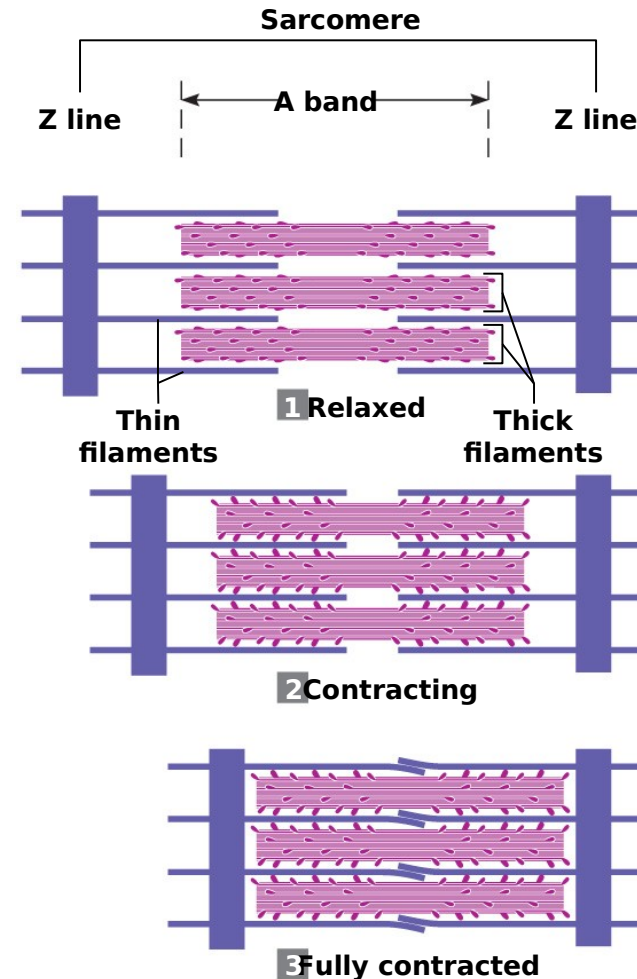


The Sliding Filament Model of Muscle Contraction

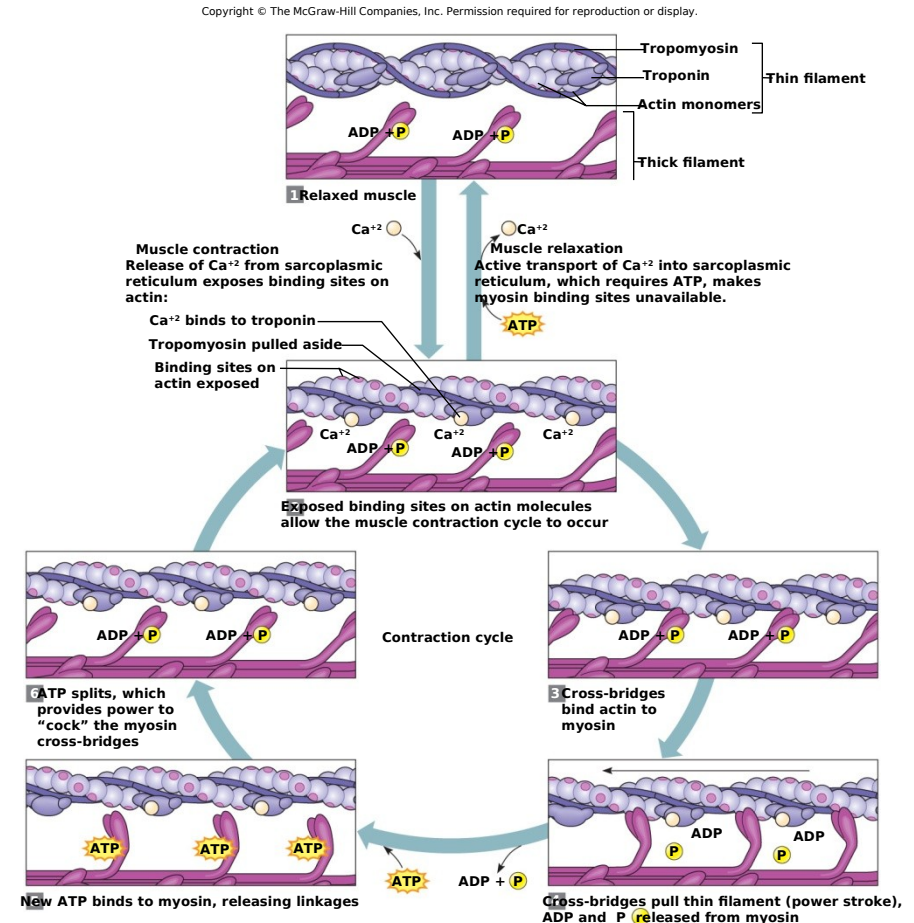
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- When sarcomeres shorten, thick and thin filaments slide past one another
- H zones and I bands narrow
- Z lines move closer together



Cross Bridge Cycling

- Myosin cross-bridge attaches to actin binding site
- Myosin cross-bridge pulls thin filament
- ADP and phosphate released from myosin
- New ATP binds to myosin
- Linkage between actin and myosin cross-bridge break
- ATP splits
- Myosin cross-bridge goes back to original position



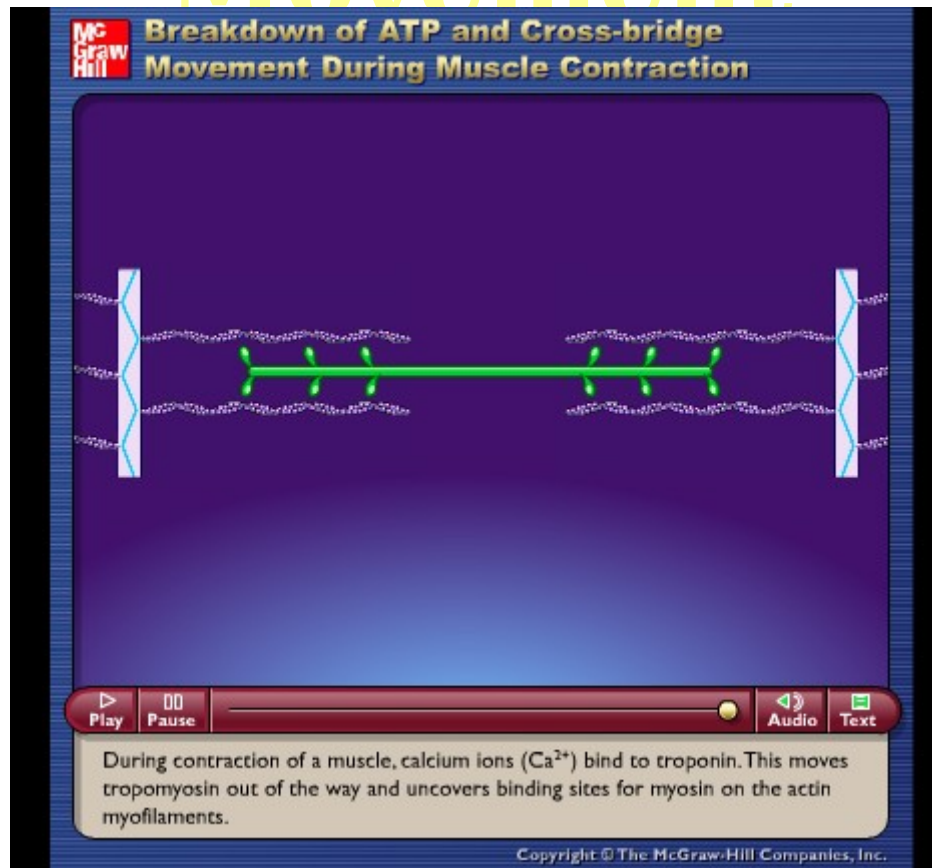
Animation: The Cross-Bridge Cycle

The Cross-Bridge Cycle



Step
Loop

Animation: Breakdown of ATP and Cross-Bridge Movement



Relaxation

- Acetylcholinesterase – rapidly decomposes Ach remaining in the synapse
- Muscle impulse stops
- Stimulus to sarcolemma and muscle fiber membrane ceases
- Calcium moves back into sarcoplasmic reticulum (SR)
- Myosin and actin binding prevented
- Muscle fiber relaxes

Animation: Action Potentials and Muscle Contraction

